HARDCANO 12 SE

Intelligent FAN Control System **P/N:A2349**

User's Manual

Thermaltake
Coolall Your Life

HARDCANO 12 SE

Thermaltake
Coolall Your Life

Content

Part I - Introduction

Part II - Installation

Part III - Q & A

Part I
Introduction

1) Overview

Thank you for purchasing Thermaltake's latest Intelligent Thermal Management System: Hardcano 12SE. Today ' Personal Computer is much more powerful and robust; therefore, manufacturers turn to thermal solution that pushes more air and dissipates heat more effectively. Cluster of high speed fans inside a chassis can create undesired noises.

Hardcano 12 SE is designed to efficiently address this issue by focusing on components that are generating the most noise and in the same time simply the entire process. Hardcano 12SE can deliver functions that none others have even attempted. It has 4 channel of fan speed controller that enables users to manually adjust each fan unit individually or switch it to auto mode that allows the module to adjust fan speed automatically according to temperature status.

At a touch of a button, Hardcano 12 SE can deliver fan speed, temperature and alarm status for each of the 4 locations in real-time. Traditional VR knobs have been replaced with more reliable Precision Electronic Buttons. The whole module is the size of a regular CD-ROM drive with stylish and futuristic front bezel design to give any computer a high-tech appeal.

2) Components Check

HARDCANO 12 SE

Accessory Pack x 2

4 sets of temperature probe 4 sets of fan speed control wire x1

3 pin to 4 pin adaptor x 1

## 3) Key Introduction

No .	Key	Function
1	**+**	While operating in Manual Mode, each time "+" button is pressed, the corresponding fan will increase by~3.125% of its maximum speed. (This function is disabled while operating in Automatic Mode.)
2	Mode	To toggle between Automatic and Manual Mode (Default: Automatic)
3	**–**	While operating in Manual Mode, each time "-"button is pressed, the corresponding fan will decrease by ~3.125% of its maximum speed. (This function is disabled while operating in Automatic) Mode. **Minimum fan speed is 50% of its maximum speed)
4	$^{\circ}$C/$^{\circ}$F	To toggle between Celsius and Fahrenheit display mode. (Default: Celsius)
5	Alarm	To display FanSpeed, Temperature and Alarm setting corresponding to FAN1/T1. (FAN1/T1 is the default after each computer restart)
6	Fan1/T1	To set the threshold at which alarm will sound to notify users about high temperature. *Default: 60 $^{\circ}$C. ** Preset Values: 40 $^{\circ}$C, 50 $^{\circ}$C, 60 $^{\circ}$C, 70 $^{\circ}$C 104 $^{\circ}$F, 122 $^{\circ}$F, 140 $^{\circ}$F, 158 $^{\circ}$F
7	Fan2/T2	To display FanSpeed, Temperature and Alarm setting corresponding to FAN2/T2.
8	Fan3/T3	To display FanSpeed, Temperature and Alarm setting corresponding to FAN3/T3.
9	Fan4/T4	To display FanSpeed, Temperature and Alarm setting corresponding to FAN4/T4.

4) Display Introduction
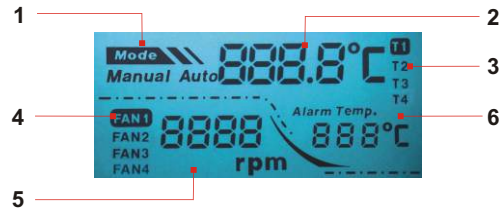
No.	Icon	Description
1	Mode State	Displays the current mode which the module is operating under: Auto (Automatic) / Manual
2	Temperature	Displays current temperature
3	T1~T4	Shows the current temperature monitoring location. (Regardless of its current monitoring location, when one of the threshold temperature is reached, module will sound and its backlight will flash to alarm user.)
4	Fan1~Fan4	Shows the current fan speed monitoring location. (Regardless of its currently monitoring location, when one of the fan stops operating, LCD will display "0000rpm" and buzzer will sound to alarm user.)
5	XXXXRPM	Displays fan RPM. (Round Per Minute.)
6	Alarm temp.	Displays the current temperature alarm threshold.

5) Connectors

Inclusion:
3pin connector *X4*
thermal probe *X4*
4pin connector *X1*

Connectors: 4pin connector *X1*		For power supply
Connectors: Fan controller *X4*	Example **T1**	For CPU fan
	Example **T2**	For VGA fan
	Example **T3**	For case fan
	Example **T4**	For power supply fan
Connectors: thermal probe *X4*	Example **FAN1**	For CPU cooler
	Example **FAN2**	For VGA cooler
	Example **FAN3**	For case environment
	Example **FAN4**	For power supply
3 pin to 4pin adaptor X1		Connect H12 Control Connector
		+12V +5V 4pin Power Connector
		Fan Control Connector

Part II
Installation

1) How to install in case.

Multiple pre-drilled mounting holes to accommodate various 5.25" drive depth.

Application for all kinds case installation:

Example:

2) Fan control function

2.1 Power Connector

Note:Strongly recommended connecting the power connector to the PSU directly.
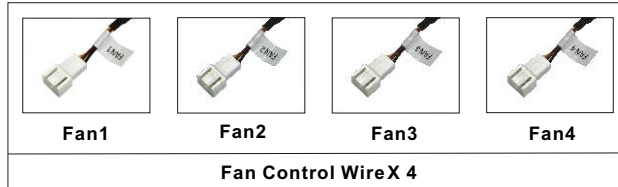

Power Cable   Power Socket   Connect to HARDCANO 12 SE   Connect to PSU
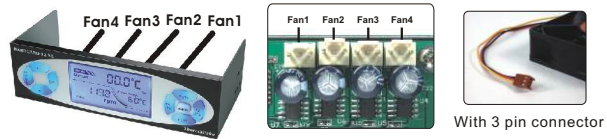
2.2 Fan Connectors

Fan1	Fan2	Fan3	Fan4
Fan Control Wire X 4			

2.3 How to install the connectors

2.3.1 Fan connector with RPM signal wire

(1) With 3 pin connector

Black
Ground   Red   Yellow
         +12V   Signal RPM

Example:

Fan4 Fan3 Fan2 Fan1

Fan1 Fan2 Fan3 Fan4

With 3 pin connector

Controller connection figure

Application:

Each set of Fan Control Cable is labeled as followed:
Fan1/Fan2/Fan3/Fan4
Each can be connected to 3pin fan connector.

Connecting Fans

FAN1

Above application shows Fan1 Fan Control Cable connected to the most
common fan connector. This setup will allow Hardcano 12 to adjust fan
speed and receive RPM signal as well.(please refer Q&AQ5)

(2) With 4 pin connector and RPM signal wire

Some fan unit may be using +12V +5V 4pin connector.
In order for Hardcano 12 module to control, you'll need to utilize this
included adaptor.

PCB Fan Connector

Fan Monitor Connector

Adaptor(3 pin to 4 pin)

4 pin connector

2.3.2 Fan connector without RPM signal wire

PCB Fan Connector

Adaptor(3 pin to 4 pin)

Fan connector without RPM signal wire

4 pin connector

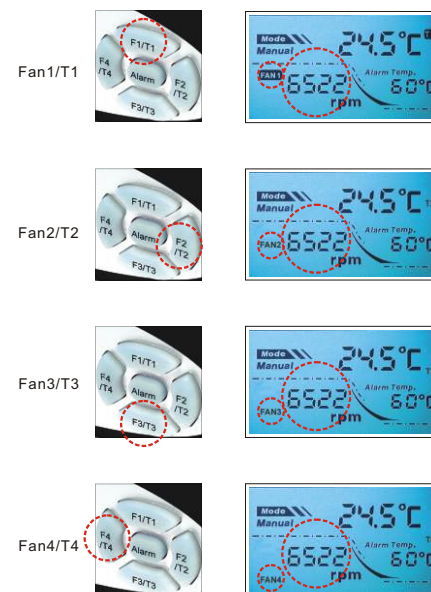*A few variations of fan does not provide RPM signal. In such cases, Hardcano 12 module can only control the Fan's speed but not monitor its RPM.*

Case Fan

VGA card cooler

Fan connectors
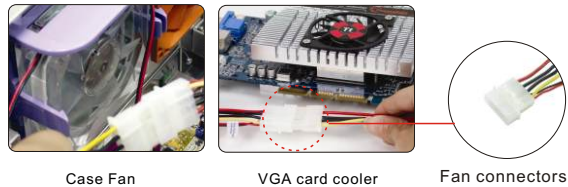
2.4 How to read fan speed

Select the Fan you wish to adjust.

Fan1/T1

Fan2/T2

Fan3/T3

Fan4/T4

Press "+"button to increase fan speed.
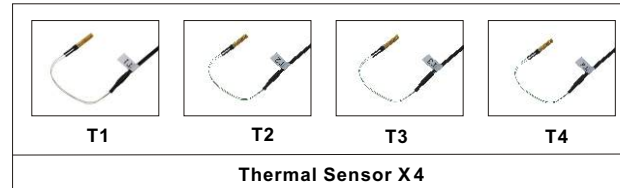(Maximum speed varies from each different fan unit.)

Press on "-" to decrease fan speed. (Minimum speed is 50% of the fan's maximum speed.)

3) Temperature detect function

3.1 Thermal sensor

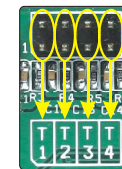**T1**   **T2**   **T3**   **T4**

Thermal Sensor X 4

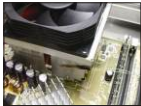**3.2 How to attach the thermal sensor**

Application:

Hardcano 12 includes 4 sets of Thermal Probe.
Attach each Thermal Probe to different heat
sources with the included thermal tape.

Example:

Thermal Sensor Connection Figure

T1
CPU cooler
detect CPU temp

T2
VGA card cooler
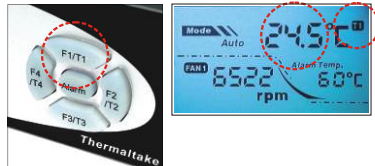detect VGA temp.

T3
CPU fan
detect case
environment temp.

T4
Power supply
detect PSU temp

CAUTION:
Avoid excessive pressure to the sensor

3.3 How to read temperature

Example T1 :

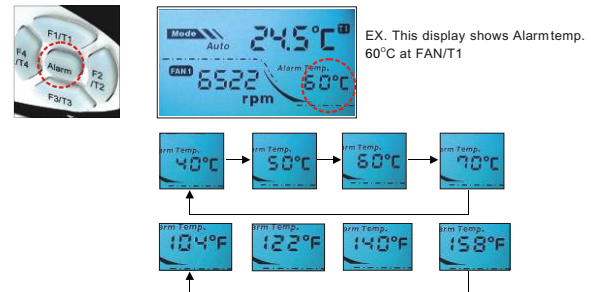### 4) Alarm function

4.1 How to set the Alarm temperature

Choose the parameter you wish to configure the alarm setting for.

Example T1 :

Press the "Alarm" button repeatedly until your desired temperature is shown on the LCD. (Default: 60°C)

EX. This display shows Alarm temp.
60°C at FAN/T1

5) Auto and Manual Mode

5.1 How to distinguish Auto/Manual mode

While the computer is idling or under minor workload, it is recommended to switch operating mode to Automatic to minimize the overall noise level.

Auto. Mode
(when you away from the computer or the system workload is minor)

Each fan's speed will be automatically adjusted according to each preset location's temperature. Following chart represents the approximate speed at which fan will be operating under at different temperature.
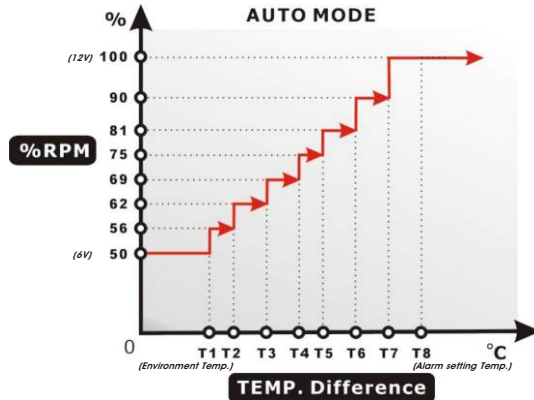

Manual Mode
(when you are using the computer or the system workload is heavy)

While operating under Manual Mode, users may adjust the fan speed manually by pressing on "+" button to increase or "-" button to decrease.

"+" KEY: Increase fan speed by 3.125% of its maximum RPM.
Maximum RPM will vary from different fan units.

"-" KEY: Decrease fan speed by 3.125% of its maximum RPM.
Lowest RPM is 50% of its maximum RPM.
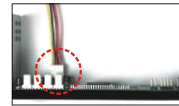
5.2 How to set the mode
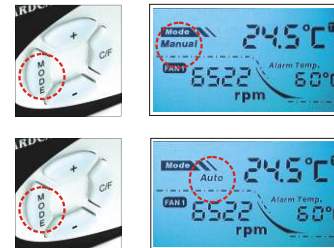
Part III
Q&A

Q&A

Q1:The Hardcano 12 Module does not come on after system is
     Powered?
  Ans: Please make sure the main power connector is connected to
       Power Supply.

Make sure all connectors
are connected securely.

Q2: LCD does not display temperature?
  Ans:1.Make sure its corresponding Thermal Probe is attached
          correctly to the component you wish to monitor.
        2. Examine the Thermal Probe to see if there is any cut or
           Discontinuity!

Q3: LCD does not display fan RPM?
  Ans:1.Make sure the cables are connected securely.
        2.Verify the fan unit you are controlling & monitoring has RPM
          signal capability. Majority of the 3 wire fan have RPM signal
          capability, while 2 wire fans do not.

Q4: Hardcano 12 unit is unable to adjust fan speed?
   Ans: A portion of fan unit have built in fan speed control.
         To allow Hardcano 12 to take control, certain steps need to be
         Performed. ie. Insert jumper.

Fan Failure Display

In the event of a failure, Hardcano 12 unit will sound off alarm
and LCD will have the following RPM display: 0000.